



# Developments in Health and Environment Tracking in Canada

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Tracks 2006 – Tracking Network Conference  
Atlanta GA

Douglas Haines  
Safe Environments Programme  
Health Canada

# Facts about Canada

- 10 provinces & 3 territories
- 32.5 million people, 80% urban
- 2<sup>nd</sup> largest country by area
- Advanced economy – G8 country
- Life Expectancy: 80.2 years
- Provincial / Territorial jurisdiction for health





# Environmental Health Issues

- Water quality
- Indoor environments
- Contaminated sites
- Radiation
- Technologies
- Emergency preparedness
- Air quality
- Food safety
- Toxic chemicals
- Climate change
- Vulnerable populations
- Natural and built environments
- Environmental assessment
- Local / regional / national / international dimensions

# Pressures on Environmental Health

- 10% of total disease burden in Canada due to environment  
(WHO/UNEP, 2004)
  - \$14 Billion annually in direct health costs
- Health care costs increasing
  - 1975 - 7% GDP;      2005 – 10.4% GDP
  - Public Health accounts for 5.5% of total health expenditures
- Globalization
- Urbanization (90% urban by 2020)
- Intensive natural resource, industrial, technological development
- Public expectations for health protection, prevention, treatment



# Definition for Environmental Health

Comprises those aspects of human health, disease, injury and well-being, that are determined by chemical, biological and physical factors in the environment

- includes the effects on health of the broad physical environment and related socio-economic factors
- also the professional practice of assessing, correcting, controlling and preventing environmental risks and promoting the benefits for individuals and communities.



# Definition for Tracking/Surveillance

Ongoing, continuous and permanent collection, integration, analysis and interpretation of data about ***Hazards, Exposures, Health Effects*** and ***Interventions*** related to environmental factors.

Includes the creation of surveillance products and dissemination of information.



# Definition for Indicators

- “ an expression of the link between environment and health, targeted at an issue of specific policy or management concern, and presented in a form that facilitates interpretation for decision-making.”

*Corvalan et al, 1996*



# Environmental Health Surveillance in Canada

## Current State:

- EH surveillance lags behind other health and safety domains
- Health surveillance & environmental monitoring systems exist separately

## Challenges:

- |                       |                       |              |
|-----------------------|-----------------------|--------------|
| -Linkages of H&E data | -Availability of data | -Integration |
| -Diversity of sources | -Compatibility        | -Standards   |
| -Management           | -Capacity             | -Leadership  |

## Situation:

- Strong interest in strengthening national EH surveillance systems
- Pieces of a national network exist and can be built upon





# Snapshot of Health Surveillance Systems

## Systems/Programs

- Canadian Network for Public Health Intelligence
- C-EnterNet (sentinel site surveillance for food & water enteric disease)
- Canadian Perinatal Surveillance System
- West Nile Virus Surveillance
- National Dosimetry Services (occupational radiation)
- Northern Contaminants Program (exposures)

## Tools

- Canadian Integrated Public Health Surveillance Program (computer/database tools)
- Disease Surveillance Online (Cancer, Chronic Diseases, Notifiable Diseases)
- Non-Communicable Diseases Surveillance Infobase

# Snapshot of Health Surveillance Systems (cont.)

## National Surveys

- Canadian Total Diet Studies (contaminants in food)
- Canadian Community Health Surveys (general health & focus content)
- Canadian Health Measures Survey (2007)

### **Environmental Health Surveillance in Provinces and Territories**

Quebec: Indicators-based, related to Public Health Plans,

14 current indicators, 14 more in future

Annual regional reports, Health Status Report every 5 years



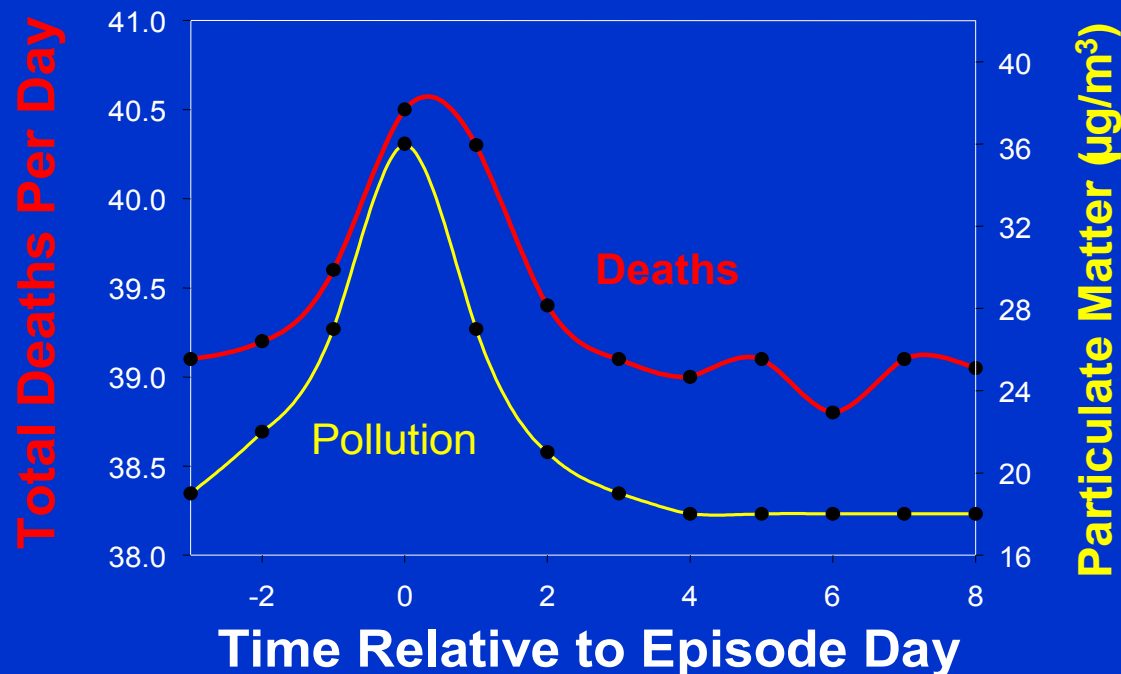
# Snapshot of Environmental Monitoring Systems

- Canadian Information System for the Environment
- National Environmental Indicators Series
- National Pollutant Release Inventory
- National Air Pollutant Surveillance Network
- Canadian Atmospheric Measurement Network
- Canadian Radiological Monitoring Network
- Drinking Water Information Management Systems in provinces
- Sport fish Contaminant Monitoring Program (Ontario)

# Integration of Health and Environmental Data

## Case Example

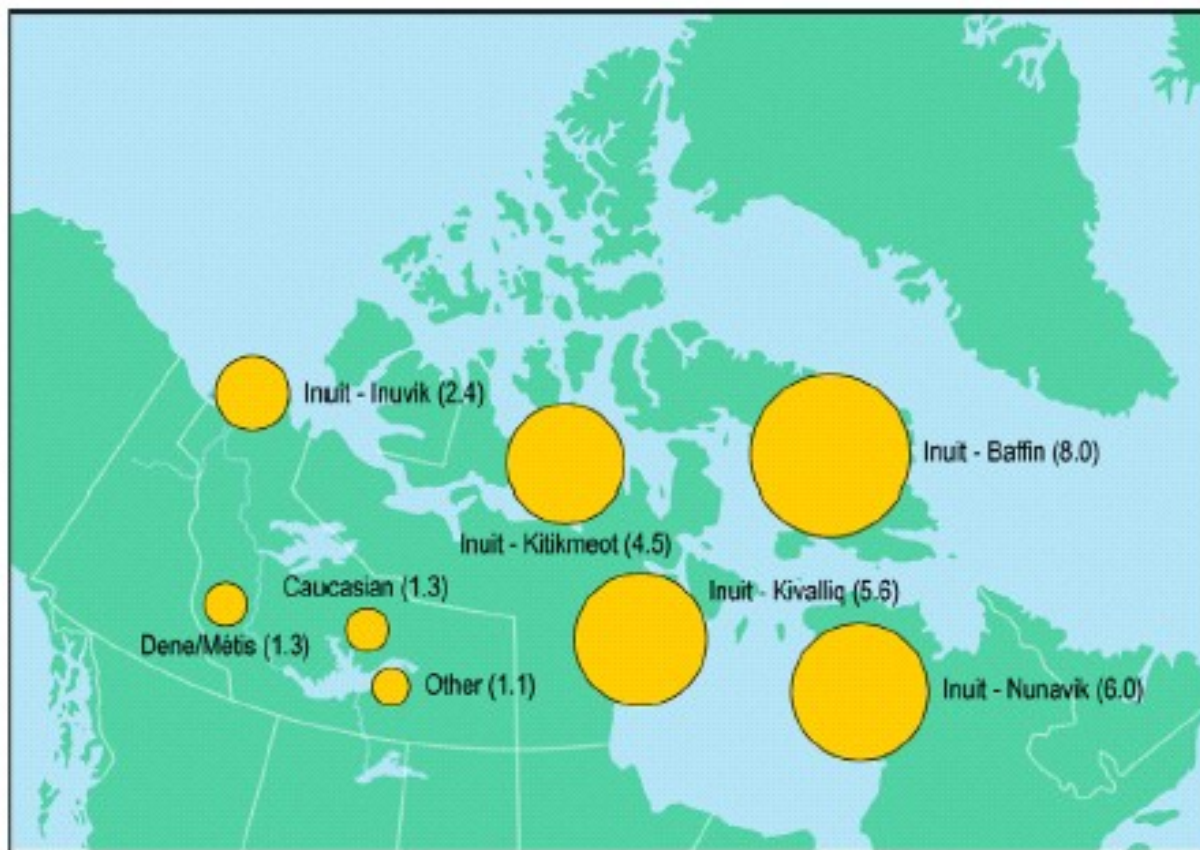
### Effect of Pollution Episode (Toronto, Canada)



# Population Exposure Monitoring

## Case Example

### Maternal PCB Levels (as Arochlor 1260) in Arctic Canada ( $\mu\text{g/L}$ plasma)



Source: Van Oostdam et al, 2005



# Tracking/Surveillance Task Group

Formed in 2005 under the *Federal-Provincial-Territorial Committee on Health and the Environment*

- Develops and provides recommendations to parent committee on measures to strengthen tracking
- Members from Health and Environment agencies



# **Tracking/Surveillance Concept Paper (Winter 2006)**

## **Three components to strengthen:**

- Tracking Network (information systems)
- Biomonitoring
- Indicators and State of Environmental Health Reporting



# Tracking/Surveillance Concept Paper

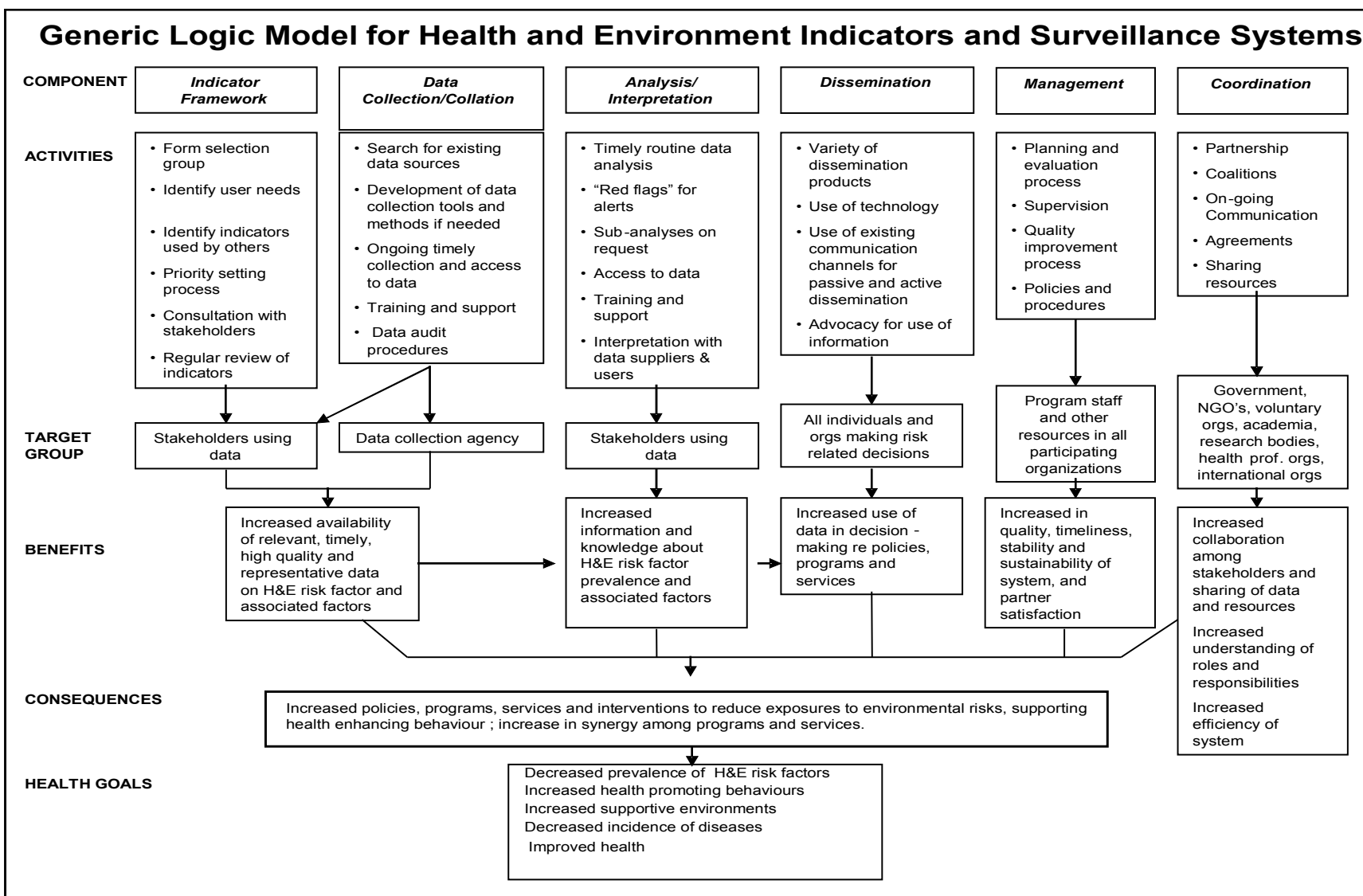
Recommended approaches for strengthening H&E tracking:

- Build upon existing systems and networks
- Consistent with F/P/T priorities and strategies
- Collaborative among health and environment agencies and partners
- Based on indicators and measurements selected by consensus
- Incremental with piloting leading to concrete results

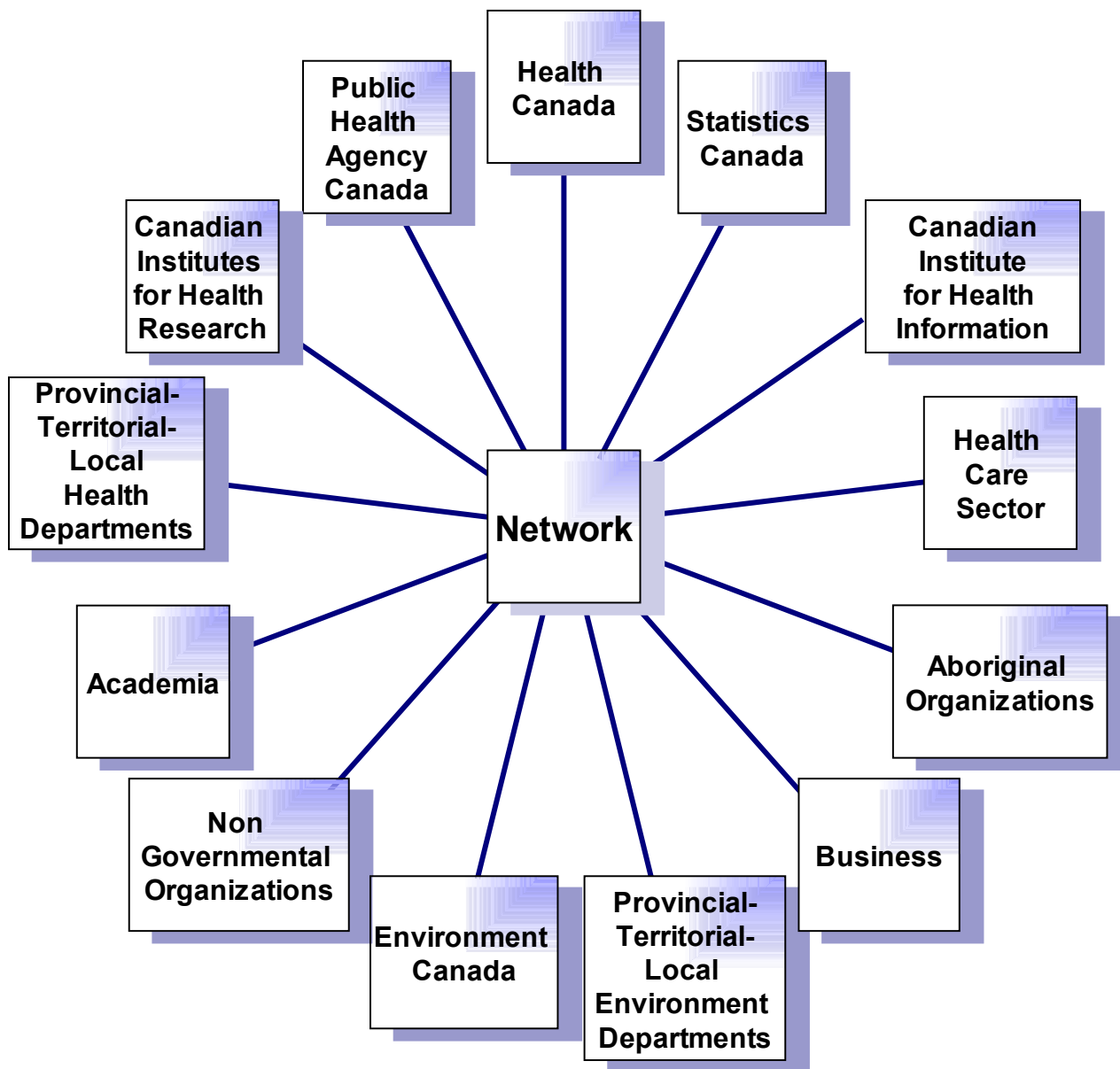


# Tracking/Surveillance Concept Paper

## Generic Logic Model for Health and Environment Indicators and Surveillance Systems



# Tracking/Surveillance Network – Key Players






# Progress – Tracking Network


- Surveillance, Monitoring and Indicators office being established at Health Canada
  - Strategic planning, coordination, networks and partnerships, reporting, biomonitoring
  
- Children's Environmental Health Geoportal (pilot project)
  - Online application to access and integrate distributed environmental data and children's health surveillance and socio-demographic data
  - Enable spatio-temporal analysis

# Progress – Tracking Network



Public Health  
Agency of Canada

Agence de santé  
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## Canadian Integrated Outbreak Surveillance Centre

### Drinking Water Advisory Application

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>> NB

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>> NS

>> NT

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>> PE

>> QC

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>> YK

>> Create New Advisory


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### New Brunswick

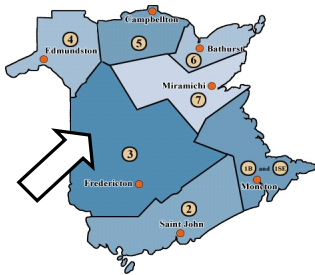


POSTED ADVISORIES

#### Calendar Week of April 10, 2006

▲▼ Jurisdiction	▲▼ Year To Date (Active)	▲▼ 2005 Total (Active)	▲▼ 2004 Total (Active)
Region 1	4(1)	9(1)	8
Region 2	0	10	6
Region 3	0	9(1)	7
Region 4	0	8	9
Region 5	5(2)	9	4
Region 6	0	3	5
Region 7	2	6	2

Hide Map



By clicking on the Health Region name from either the table or the map it will take the user into a current year summary of advisories for that region.


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# Progress - Biomonitoring



## Canadian Health Measures Survey (2007-2009)

- Partnership with Statistics Canada
- 5000 Canadians, ages 6-79 years
- Collection of blood and urine
- Biomonitoring measures
  - Metals, PCB, PBDE, OC pesticides, organophosphate pesticides, phenoxy herbicides, phthalates, cotinine, perfluorinated compounds, bisphenol A
- Corresponding questionnaire
- National level population representative sample – creating reference values



# Progress - Indicators

- **Children's Environmental Health Indicators**
  - National process to identify indicators (2005-2006)
  - Indicators report (spring 2006)
  - Pilot project on water-related health indicators (under development)
  
- **Air Health Indicator** (under development)
  - Tracking tool to assess change in health risks (mortality) over time related to ambient air pollution in any community
  
- **Source Water Quality Indicator** (under development)
  - Measuring, tracking and reporting on source/raw water quality



## In Conclusion

- Health and environment tracking and surveillance are gaining profile
- Will build from existing capacity
- Strengthen networks and partnerships
- Incremental approach